CONTENTS

NUMBER 1

O. PREINING	1	Guest Editorial: Aerosol climatology
L. GRADOŃ and D. ORLICKI	3	Deposition of inhaled aerosol particles in a generation of the tracheobronchial tree
C. P. YU and B. ASGHARIAN	21	A kinetic model of alveolar clearance of amosite asbestos fibers from the rat lung at high lung burdens
Y. YE and D. Y. H. PUI	29	Particle deposition in a tube with an abrupt contraction
W. HOLLÄNDER, W. BLOMESATH and A. BEYER	41	An *in situ* calibration technique for the determination of large particle aspiration efficiencies of TSP samplers: the stop distance concept
L. GOMES, G. BERGAMETTI, F. DULAC and U. EZAT	47	Assessing the actual size distribution of atmospheric aerosols collected with a cascade impactor
S. O. LEKHTMAKHER	61	Data reduction of measurements with particle size-selective optical counters
D. C. TAFLIN and E. J. DAVIS	73	A study of aerosol chemical reactions by optical resonance spectroscopy
J. ROSINSKI, B. KOPCEWICZ and N. SANDOVAL	87	Heterogeneous nucleation of ice at the liquid–liquid interface
M. SHAPIRO and H. BRENNER	97	Dispersion/reaction model of aerosol filtration by porous filters
C. KANAOKA and S. HIRAGI	127	Pressure drop of air filter with dust load
	139	Workshop Report
	155	Book Review
	157	Announcements
	i	New Patents

NUMBER 2

D. J. RADER	161	Momentum slip correction factor for small particles in nine common gases

J. Fernandez de la Mora, S. V. Hering, N. Rao and P. H. McMurry — 169 Hypersonic impaction of ultrafine particles

E. R. Shchukin, Z. L. Shulimanova, V. A. Zagaynov and A. N. Kabanov — 189 Deposition of aerosol particles in plane-parallel channels at different wall temperatures

M. Ramamurthi, R. Strydom and P. K. Hopke — 203 Assessment of wire and tube penetration theories using a $^{218}PoO_x$ cluster aerosol

H.-C. Wang and G. Kasper — 213 Note on inertial deposition of particles on an orifice disc

D. W. Cooper and J. J. Wu — 217 The inversion matrix and error estimation in data inversion: application to diffusion battery measurements

J. K. Wolfenbarger and J. H. Seinfeld — 227 Inversion of aerosol size distribution data

K.-H. Ahn and B. Y. H. Liu — 249 Particle activation and droplet growth processes in condensation nucleus counter—I. Theoretical background

K.-H. Ahn and B. Y. H. Liu — 263 Particle activation and droplet growth processes in condensation nucleus counter—II. Experimental study

W. H. Benner and R. J. Otto — 277 Acceleration of submicron-diameter particles

J. Kvasnicka and G. Riley — 289 Electrostatic charge on uranium ore dust

J. Podzimek — 299 Physical properties of coarse aerosol particles and haze elements in polluted urban–marine environment

309 Book Review

311 Announcement

i Events Calendar

NUMBER 3

B. L. B. Wiman, M. H. Unsworth, S. E. Lindberg, B. Bergkvist, R. Jaenicke and H.-C. Hansson — 313 Perspectives on aerosol deposition to natural surfaces: interactions between aerosol residence times, removal processes, the biosphere and global environmental change

S. Fuzzi and A. Waldvogel — 339 European Aerosol Conference, September 1989, Vienna, Austria. Workshop: Fog and cloud research

W. Stahlhofen, J. Heyder and J. H. Vincent	344	European Aerosol Conference, September 1989, Vienna, Austria. Workshop: Aerosols and health effects
J. H. Vincent, D. Mark and B. G. Miller	345	Aerosol inspirability: an update
J. Heyder, T. Beinert and A. Rajathurai	347	Intrapulmonary particle transport as a function of gas composition
J. D. Blanchard, P. J. Anderson, S. A. Shore, J. D. Brain and J. M. Drazen	349	Changes in aerosol-derived airspace diameter induced by bronchoconstrictors and alterations in lung volume
T. D. Sweeney, J. D. Blanchard, T. B. Zeltner, J. E. Carter and J. D. Brain	350	Delivery of aerosolized drugs to the lungs with a metered-dose inhaler: quantitative analysis of regional deposition
W. Stahlhofen, W. Möller and J. Godleski	355	Relaxation measurements with spherical magnetic particles in the human lungs
P. Gehr, M. Geiser, V. Im Hof, S. Schuerch and L. M. Cruz-Orive	362	Stereological estimation of particle retention and clearance in the intrapulmonary conducting airways of the hamster lungs
C. P. Yu, B. Asgharian and Y. K. Chen	368	Deposition and clearance modeling of fibrous dusts in the lungs
W. G. Kreyling	371	Aerosol particle parameters maintaining lung clearance by intracellular dissolution and translocation
H. Muhle, B. Bellmann, O. Creutzenberg, U. Heinrich, M. Ketkar and R. Mermelstein	374	Dust overloading of lungs after exposure of rats to particles of low solubility: comparative studies
B. Bellmann, H. Muhle, O. Creutzenberg and R. Mermelstein	377	Recovery behaviour after dust overloading of lungs in rats
J. Ferin, G. Oberdörster, D. P. Penney, S. C. Soderholm, R. Gelein and H. C. Piper	381	Increased pulmonary toxicity of ultrafine particles? I. Particle clearance, translocation, morphology
G. Oberdörster, J. Ferin, G. Finkelstein, P. Wade and N. Corson	384	Increased pulmonary toxicity of ultrafine particles? II. Lung lavage studies
N. H. Seemayer, A. Happel, H. Behrendt, W. Hadnagy and R. Tomingas	387	Comparison of cytotoxicity of airborne particulates to rat and human macrophages

J. P. MITCHELL and W. D. GRIFFITHS — 392 European Aerosol Conference, September 1989, Vienna, Austria. Workshop: Needs in instrumentation

E. R. SHCHUKIN, A. N. KABANOV, E. YANKOVSKA and V. S. BESKOV — 397 Thermodiffusiophoretic deposition of aerosol particles on cylindrical surfaces

E. R. SHCHUKIN and A. N. KABANOV — 409 Characteristic features of the thermodiffusiophoretic motion of aerosol particles in the vicinity of a catalytically active surface

G. A. FERRON and S. C. SODERHOLM — 415 Estimation of the times for evaporation of pure water droplets and for stabilization of salt solution particles

S. ERDAL and N. A. ESMEN — 431 The curvilinear motion of coarse particles: new thoughts on theory and applications

W. W. SZYMANSKI and P. E. WAGNER — 441 Absolute aerosol number concentration measurement by simultaneous observation of extinction and scattered light

N. P. VAUGHAN — 453 The generation of monodisperse fibres of caffeine

P. C. D. HOBBS, V. P. GROSS and K. D. MURRAY — 463 Suppression of particle generation in a modified clean room corona air ionizer

G. J. NEWTON, Y. S. CHENG, E. B. BARR and H. C. YEH — 467 Effects of collection substrates on performance and wall losses in cascade impactors

471 Conference Reports

477 Book Review

479 Announcements

NUMBER 4

481 Birthday greetings to Professor C. N. Davies

G. SCHWEIGER — 483 Raman scattering on single aerosol particles and on flowing aerosols: a review

Y. SEO and J. R. BROCK — 511 Distributions for moment simulation of aerosol evaporation

G. ROY and P. TESSIER — 515 Particle size distributions obtained from diffraction patterns: contribution of refraction and reflection

I. COLBECK, L. APPLEBY, E. J. HARDMAN and R. M. HARRISON — 527 The optical properties and morphology of cloud-processed carbonaceous smoke

M. R. SCHAMBERGER, J. E. PETERS and K. H. LEONG — 539 Collection of prolate spheroidal aerosol particles by charged spherical collectors

T. SCHNEIDER, O. H. PETERSEN, A. A. NIELSEN and K. WINDFELD — 555 A geostatistical approach to indoor surface sampling strategies

M. D. HOOVER, S. A. CASALNUOVO, P. J. LIPOWICZ, H. C. YEH, R. W. HANSON and A. J. HURD — 569 A method for producing non-spherical monodisperse particles using integrated circuit fabrication techniques

J. H. VINCENT, D. MARK, B. G. MILLER, L. ARMBRUSTER and T. L. OGDEN — 577 Aerosol inhalability at higher windspeeds

C. P. YU, B. ASGHARIAN and J. L. ABRAHAM — 587 Mathematical modeling of alveolar clearance of chrysotile asbestos fibers from the rat lungs

595 Announcements

i New Patents

NUMBER 5

B. V. RAMARAO and C. TIEN — 597 Role of Basset force on particle deposition in stagnation flow

D. A. BRAATEN, K. T. PAW U and R. H. SHAW — 613 Particle resuspension in a turbulent boundary layer—observed and modeled

H. BAI and P. BISWAS — 629 Deposition of lognormally distributed aerosols accounting for simultaneous diffusion, thermophoresis and coagulation

S. L. GIRSHICK and C.-P. CHIU — 641 Numerical study of MgO powder synthesis by thermal plasma

T. MYOJO — 651 The effect of length and diameter on the deposition of fibrous aerosol in a model lung bifurcation

L. KOBLINGER and W. HOFMANN — 661 Monte Carlo modeling of aerosol deposition in human lungs. Part I: simulation of particle transport in a stochastic lung structure

W. HOFMANN and L. KOBLINGER — 675 Monte Carlo modeling of aerosol deposition in human lungs. Part II: deposition fractions and their sensitivity to parameter variations

D. BEMER, J. F. FABRIES and A. RENOUX — 689 Calculation of the theoretical response of an optical particle counter and its practical usefulness

Y. S. Cheng, B. T. Chen and H. C. Yeh — 701 Behaviour of isometric nonspherical aerosol particles in the aerodynamic particle sizer

NUMBER 6

A. Schmidt-Ott, U. Baltensperger, H. W. Gäggeler and D. T. Jost — 711 Scaling behaviour of physical parameters describing agglomerates

S. Tohno and K. Takahashi — 719 Morphological and dynamic characterization of Pb fume particles undergoing Brownian coagulation

R. A. Pulley and J. K. Walters — 733 The effect of interception on particle collection by spheres and cylinders

P. J. Iles — 745 Size selection of fibres by cyclone and horizontal elutriator

J. C. Barrett and C. F. Clement — 761 Growth and redistribution in a droplet cloud interacting with radiation

Q. J. Lu and N. Fukuta — 777 Heating of hygroscopic aerosol in moist air

Y. F. Su, Y. S. Cheng, G. J. Newton and H. C. Yeh — 785 Diffusion coefficients of lead-212 clusters in purified air containing defined amounts of water vapor

B. S. Cohen and B. Asgharian — 789 Deposition of ultrafine particles in the upper airways: an empirical analysis

O. Amiel, J.-M. Heintz, F. Duboudin and R. Salmon — 799 Preparation of spherical and controlled size particles of silica or tantalum oxide by chemical reaction in aerosols

M. Ocaña and E. Matijević — 811 Preparation of uniform colloidal dispersions by chemical reactions in aerosols—V. Tin(IV) oxide

Technical Note

S. A. M. Al-Chalabi, A. R. Jones and P. F. Luckham — 821 A simple method for improving the dispersability of micron-sized solid spheres

Discussion

W. W. Nazaroff, J. Chomiak and A. K. Gupta — 827 Thermophoresis in boundary layer flows

829 Announcements

NUMBER 7

S. E. PRATSINIS 831 Guest Editorial: Aerosol processing of materials

A. D. EISNER, R. C. GRAHAM and T. B. MARTONEN 833 Coupled mass and energy transport phenomena in aerosol/vapor-laden gases—I. Theory of the hygroscopic aerosol effects on temperature and relative humidity patterns of inspired air

R. C. GRAHAM and A. D. EISNER 849 Coupled mass and energy transport phenomena in aerosol/vapor-laden gases—II. Computer modeling of water vapor/droplet interaction and entrainment

R. STRYDOM, A. H. LEUSCHNER and P. H. STOKER 859 A mobility spectrometer for measurement of initial properties of ^{218}Po

T. L. WARD and E. J. DAVIS 875 Principles of aerosol radioactivity measurement using the electrodynamic balance

J. FERNÁNDEZ DE LA MORA, N. RAO and P. H. MCMURRY 889 Inertial impaction of fine particles at moderate Reynolds numbers and in the transonic regime with a thin-plate orifice nozzle

Y. SEO 911 The influence of evaporation on the deposition of particles in impactors

H. E. REGTUIT, C. J. DE RUITER, E. L. M. VRINS, P. HOFSCHREUDER, F. OESEBURG and F. M. BENSCHOP 919 The tunnel impactor. A multiple inertial impactor for coarse aerosol

D. B. INGHAM, L. T. HILDYARD and M. L. HILDYARD 935 On the critical Stokes' number for particle transport in potential and viscous flows near bluff bodies

S. J. DUNNETT 947 Mathematical modelling of aerosol sampling with thin-walled probes at yaw orientation with respect to the wind

A. PODGÓRSKI and L. GRADOŃ 957 Motion and deposition of fibrous flexible particles in laminar gas flow through a pipe

I. A. MARSHALL, J. P. MITCHELL and W. D. GRIFFITHS 969 The calibration of a Timbrell aerosol spectrometer

W. PILACINSKI, K. W. SZEWCZYK, M. LEHTIMÄKI and K. WILLEKE 977 Characteristics of a double-orifice nebulizer

Discussion

A. G. KONSTANDOPOULOS, L. GRADOŃ and D. ORLICKI 983 Deposition of inhaled aerosol particles in a generation of the tracheobronchial tree

989 Book Reviews

991 Corrigendum

SUPPLEMENT 1

Special Issue: Proceedings of the 1990 European Aerosol Conference

Editors' Preface S1

Smoluchowski Award: 1990 *Recipient Prof. Dr Richard C. Flagan* S3

Smoluchowski Award (GAeF) S5

1. *Basic Aerosol Science*

T. VESALA, M. KULMALA and M. OLIN: Condensation and evaporation of binary droplets with internal mass transfer S7

M. P. ANISIMOV and S. N. VERSHININ: Dibutylphthalate nucleation rate at carbon dioxide different pressures S11

M. P. ANISIMOV and S. N. VERSHININ: Dibutylphthalate vapor heteromolecular nucleation in helium atmosphere S15

M. P. ANISIMOV and A. V. TAYLAKOV: Measurement of interphase energy of critical embryo S19

M. P. ANISIMOV: Metastable vapor states diagram S23

D. STEINER, S. DISERENS, H. BURTSCHER and H. C. SIEGMANN: Adsorption and desorption of PAH's on combustion aerosols S27

S. VON GERSUM and P. ROTH: High temperature oxidation of soot particles by O atoms and OH radicals S31

A. HOSPITAL and P. ROTH: Measurements on soot particle growth in premixed low pressure flames S35

A. MAJEROWICZ, E. PFALZMANN, K. SMIDOVICH, G. P. REISCHL, W. W. SZYMANSKI and P. E. WAGNER: An experimental study of Brownian coagulation for particles of different size and composition S39

I. COLBECK: Dynamic shape factors of fractal clusters of carbonaceous smoke S43

S. KÜTZ and A. SCHMIDT-OTT: Use of a low-pressure impactor for fractal analysis of submicron particles S47

S. N. ROGAK, U. BALTENSPERGER and R. C. FLAGAN: Direct measurement of mass transfer to agglomerates in the transition regime S51

A. WEBER, U. BALTENSPERGER, H. W. GÄGGELER, R. KEIL, L. TOBLER and A. SCHMIDT-OTT: In-situ studies of silver agglomerates by ICP-AES and a CNC S55

F. Lesaffre, C. Tiret, R. Botet and R. Jullien: Numerical simulation of aggregation in an expanding cloud S59

J.-R. Pao, Y.-C. Chang and J. W. Gentry: The use of simulated fractals to determine the relation between a cluster and its projection S63

A. V. Kolpakov and E. M. Dmitrieva: The efficiency of coalescence at the drops collision of incomparable dimensions S67

W. Koch and S. K. Friedlander: Particle growth by coalescence and agglomeration S73

A. A. Lushnukov, V. A. Zagaynov and M. P. Anisimov: Transport of source enhanced coagulating aerosol S77

Y. C. Chang, M. B. (Arun) Ranade and J. W. Gentry: Thermophoretic deposition of aerosol particles on transport tubes S81

N. Montassier, D. Boulaud, F. Stratmann and H. Fissan: Comparison between experimental study and theoretical model of thermophoretic particle deposition in laminar tube flow S85

G. N. Lipatov and E. A. Chernova: Several features of aerosol behaviour in laminar flow with transverse temperature gradient S89

G. N. Lipatov, T. I. Semenyuk and S. A. Grinshpun: Aerosol migration in laminar and transition flows S93

J. P. Jansen and G. M. H. Laheij: On the transport of particles through turbulent boundary layers S97

R. Periasamy, A. C. Clayton, R. P. Donovan and D. S. Ensor: Effect of wafer orientation on the particle deposition in subatmospheric pressures S101

M. Goldenberg, I. Gallily and M. Shapiro: Deposition of nonspherical particles in turbulent air flows S105

A. A. Lushnikov and V. A. Zagaynov: Transport of evaporating aerosol S109

R.-J. Han, J.-R. Pao, C. C. Wang and J. W. Gentry: Electrical charging of aggregates: simulations, data analysis, and experiments S115

R. C. Brown: The charge distribution of spherical conducting particles in a low concentration ionised gas S119

S. B. Kudritsky and L. V. Maliarova: Ion charging of drops covered with the monolayer of the surface-active substance S123

S.-I. Cederfelt, B. G. Martinsson and H.-C. Hansson: On the charge limit for crystallizing particles S127

R. A. Roos and M. Goldman: Observation of the interaction between artificially activated particles and insulating surfaces S131

K. Takahashi and M. Itoh: Laser dynamic light scattering spectroscopy and its application to aerosol dynamics studies—summary S135

M. Itoh and K. Takahashi: Dynamic light scattering and thermal relaxation process of aerosol particles S141

M. Bottlinger and H. Umhauer: Light scattering by irregularly shaped particles: computer simulation by ray-tracing S145

A. D. Bishigaev, S. M. Burkitbaev, E. A. Manykin, A. E. Nikitin and P. P. Poluektov: Dynamical rainbow echo-spectroscopy of liquid aerosols S151

C. Dellago and H. Horvath: On the accuracy of the size distribution information obtained from spectral extinction/scattering measurements S155

P. Aalto, U. Tapper, P. Paatero and T. Raunemaa: Deconvolution of particle size distributions by means of Extreme Value Estimation method S159

A. A. Lushnikov and V. A. Zagaynov: On diffusion dynamical method of the particle size analysis S163

2. *Atmospheric Aerosols*

H. M. ApSimon: Studies of European aerosols: interfacing experimentalists and modellers S167

K. R. Spurny: Atmospheric acidic aerosols (Review) S185

A. Leonardi, H. Burtscher, U. Baltensperger, A. Weber, A. Krasenbrink and B. Georgi: Ambient aerosol characterization by comparison of particles size and mass with epiphaniometer and photoemission data S189

J. Notholt and F. Raes: Test of in situ measurements of atmospheric aerosols and trace gases by long path transmission spectroscopy S193

J. Müller: Deposition velocities of particulate substances on different surfaces S197

Y. Vawda, R. M. Harrison, K. W. Nicholson and I. Colbeck: Use of surrogate surfaces for dry deposition measurements S201

P. Keronen and R. Hillamo: Estimation of dry deposition velocity of particles on the basis of measured size distributions S205

H. Sparmacher, M. Adam, K. Fülber and H. Bonka: Collection efficiency of aerosol particles by circular disks modelling snowflakes, snowout and washout coefficient S209

G. Frank, J. Tschiersch and H. Behrens: Wet deposition of tracer-marked aerosol S213

R. Pani, P. Bucher, Z. Zhang and J. Hertz: Altitude dependence of aerosol composition S217

G. Santachiara, F. Prodi and F. Vivarelli: SO_2 oxidation in monodisperse droplets grown on carbon nuclei in presence of NO_2 S221

Y. MAMANE and J. GOTTLIEB: Heterogeneous reaction of nitrogen oxides on sea salt and mineral particles—a single particle approach S225

W. BEHNKE and C. ZETZSCH: Heterogeneous photochemical formation of Cl atoms from NaCl aerosol, NO_x and ozone S229

K. RUOSS and R. DLUGI: Sulphite content of atmospheric aerosol particles S233

R. VAN DINGENEN and F. RAES: Coagulation enhancement of H_2O–H_2SO_4 aerosols: experiments and model calculations in the transition regime S237

H.-C. HANSSON, A. WIEDENSOHLER, M. J. ROOD and D. S. COVERT: Experimental determination of the hygroscopic properties of organically coated aerosol particles S241

S. E. PAULSON, S. N. PANDIS, U. BALTENSPERGER, J. H. SEINFELD, R. C. FLAGAN, E. J. PALEN, D. T. ALLEN, C. SCHAFFNER, W. GIGER and A. PORTMANN: Characterization of photochemical aerosols from biogenic hydrocarbons S245

V. YE SMORODIN: Mechanisms of heterogeneous ice nucleation onto mixed ice nuclei in the atmosphere S249

W. SEIDL and R. DLUGI: Application of a cloud model: HMS-formation as function of droplet size S255

A. R. MACKENZIE: Surface kinetic limitation of ice crystal growth in the stratosphere S259

R. G. ORALTAY and J. HALLETT: Scavenging of soot particles by ice crystals S263

G. POHLMANN and W. HOLLÄNDER: Time resolved measurements of the size distribution of submicron urban aerosols: preliminary results S267

M. STEIGER, K. NAUMANN, M. SCHULZ, M. SCHWIKOWSKI and W. DANNECKER: Quantitative determination of sources in urban aerosols using chemical receptor models S271

M. AMMANN, H. BURTSCHER and H. C. SIEGMANN: Monitoring volcanic activity by characterization of ultrafine aerosol emissions S275

A. BOTT: On the influence of the physico-chemical properties of aerosols on the life cycle of radiation fogs S279

R. A. ROOS and D. DUTERTRE-LADUREE: Atmospheric charged aerosol and electric field observations in western France S283

H. STECHMANN and W. DANNECKER: Characterization and source analysis of vehicle-generated aerosols S287

H. KOHL and M. BAGUHL: Particle injection into cometary and planetary atmospheres S291

F. TRAUTNER, G. FRANK, J. TSCHIERSCH and G. VOIGT: A method to quantify wet and occult deposition of aerosol to wheat plants S295

J. D. WATTERSON, P. N. JAYASEKERA, J. N. B. BELL and M. J. MINSKI: A study of the removal of aerosol deposits from plants under dry field conditions S299

P. L. Gupta and P. S. N. Sastri: Stability determination over crop surfaces by different methods and their comparison S303

P. N. Jayasekera, J. D. Watterson, J. N. B. Bell, A. J. H. Goddard, M. J. Minski and A. J. Taylor-Russell: Deposition and field loss studies with spinach S307

M. Schwikowski, M. Schulz, M. Steiger, K. Naumann and W. Dannecker: Transformation and transport of nitrogen compounds above the North Sea investigated by aircraft measurements S311

M. Below and B. Georgi: Air pollution by airborn particles in the ecosystem of Luzern S315

M. Schwikowski, H. Gäggeler, M. Gloor, R. Keil and D. T. Jost: Measurements of concentration, chemical composition and size distribution of background aerosol at high alpine stations S321

R. Pani, P. Bucher, U. Baltensperger, P. Haller and J. Hertz: Aerosol characterization by continuous and non-continuous methods at a prealpine site in Switzerland S325

M. Below, B. Georgi, A. Krasenbrink, S. G. Jennings, T. O'Conner and K. Conway: Analysis of the background aerosol at Mace Head/Ireland S329

A. Girgzdys, V. Ulevicius and A. Juozaitis: Atmospheric aerosol measurement in Lithuania S335

M. Maugeri, M. Valentini and G. M. Marcazzan: Elemental characterisation of atmospheric aerosol collected in an urban center of Northern Italy S339

J. Stoffregen and W. Dannecker: Measurement of particulate and gaseous pollutants and characterization of ambient air quality at various sites in Germany S343

A. Sztyler: Aerosol optical depth dependence on wavelength under different meteorological conditions in Katowice Southern Poland S347

Y. Mamane, R. K. Stevens and T. G. Dzubay: On the sources of fine and coarse carbon particles in The Great Lakes S353

J. Tschiersch, B. Hietel, P. Schramel and F. Trautner: Saharan dust at Jungfraujoch S357

F. Halek, S. Boghozian and N. Aghdaie: Simultaneous size distribution study of indoor and outdoor particulates in Tehran S361

S. Boghozian, N. Aghdaie, Sh. Kheradpir and M. Ajir: Effects of revolution and war on Tehran's atmospheric pollution S365

J. W. Zwozdziak and A. B. Zwozdziak: Sulphate aerosol production in the upper parts of the Sudety Range, Poland S369

M. Kriews, J. Bergmann, K. Naumann and W. Dannecker: On the dependence of aerosol transport and deposition on wind speed in the southern North Sea region S373

K. M. HART and J. F. PANKOW: Comparison of n-alkane and PAH concentrations collected on quartz fiber and Teflon membrane filters in an urban environment S377

T. KAINULAINEN, P. PASANEN, R. PÄRJÄLÄ and J. RUUSKANEN: Influence of different sources on air quality of a residential area in winter S381

Workshop on Atmospheric Optics S385

3. *Aerosols and Health Effects*

H. U. WANNER: Effects of atmospheric pollution on human health S389

G. OBERDÖRSTER and C. P. YU: The carcinogenic potential of inhaled diesel exhaust: a particle effect? S397

G. RUDOLF, R. KÖBRICH and W. STAHLHOFEN: Modelling and algebraic formulation of regional aerosol deposition in man S403

W. STAHLHOFEN, R. KOEBRICH, G. RUDOLF and G. SCHEUCH: Short-term and long-term clearance of particles from the upper human respiratory tract as function of particle size S407

B. RUDELL, T. SANDSTRÖM, N. STJERNBERG and B. KOLMODIN-HEDMAN: Controlled diesel exhaust exposure in an exposure chamber; pulmonary effects investigated with bronchoalveolar lavage S411

C. KÖHL: Alteration of airway wall temperature during different inhalation procedures S415

CH.F. SCHILLER-SCOTLAND, J. GEBHART, H. LINTL and R. SIEKMEIER: Human airway diameters derived from aerosol inhalation studies: effect of inspired aerosol volume and lung inflation S419

R. SIEKMEIER, CH.F. SCHILLER-SCOTLAND, J. GEBHART and H. KRONENBERGER: Pharmacon-induced airway obstruction in healthy subjects: dose dependent changes of inspired aerosol boluses S423

A. ANSELM, T. HEIBEL, J. GEBHART and G. FERRON: "In vivo"-studies of growth factors of sodium chloride particles in the human respiratory tract S427

G. SCHEUCH and W. STAHLHOFEN: Dispersion of aerosol boluses in the human tracheo-bronchial-tract during periods of breathholding S431

W. STAHLHOFEN and W. MÖLLER: Using spherical magnetic particles for testing the intracellular viscosity S435

G. SCHEUCH, J. GEBHART and C. ROTH: Uptake of electrical charges in the human respiratory tract during exposure to air loaded with negative ions S439

C. ROTH and W. STAHLHOFEN: Radioactively labelled ultrafine particles for clearance measurements S443

B. DANUSER, A. WEBER, A. L. HARTMANN and H. KRUEGER: Generation and characterization of cigarette sidestream smoke S447

A. JÄPPINEN, H. LEHTI and K. NIEMINEN: Particle measurements in army barracks S451

O. CREUTZENBERG, B. BELLMANN, U. HEINRICH, R. FUHST, W. KOCH and H. MUHLE: Clearance and retention of inhaled diesel exhaust particles, carbon black, and titanium dioxide in rats at lung overload conditions S455

J. C. STRONG, M. WALSH and A. BLACK: A facility for studying the carcinogenic and synergistic effects of radon daughters in rodents S459

I. BECK-SPEIER, W. G. KREYLING, G. B. LUIPPOLD and J. J. GODLESKI: Sulfite oxidase activity in rat nasal tissue and pathologic responses to inhalation of sulfur oxides S463

M. DAHLBÄCK, S. EIREFELT, O. NERBRINK, M. PRYTZ and Z. WAGNER: A new aerosol delivery system to dogs S467

TH. TUCH, G. A. FERRON, E. KARG, W. G. KREYLING and J. HEYDER: Long-term exposure of dogs to a sulphite aerosol: I. Rationale and design parameters S471

K. L. MAIER, I. BECK-SPEIER, N. DAYAL, P. HEILMANN, H. HINZE, A.-G. LENZ, L. LEUSCHEL, E. MATJEKOVA, U. MIASKOWSKI, L. RUPRECHT and J. HEYDER: Long-term exposure of dogs to a sulphite aerosol: II. Effects on biochemical and cellular lung parameters S475

G. A. FERRON, W. G. KREYLING, G. FÜRST, M. NEUNER, G. SCHUMANN and J. HEYDER: Long-term exposure of dogs to a sulphite aerosol: III. Effect of lung clearance S479

S. TAKENAKA, P. HEILMANN, L. RUPRECHT, U. HEINZMANN, A. B. MURRAY, G. FÜRST, A. HEINI and J. HEYDER: Long-term exposure of dogs to a sulphite aerosol: IV. Effects on extrapulmonary airway morphology S483

J. J. GODLESKI, W. G. KREYLING and G. SCHUMANN: Particle redistribution in the lungs and short term clearance after multiple inhalations S487

P. GEHR, S. SCHÜRCH, M. GEISER and V. IM HOF: Retention and clearance mechanisms of inhaled particles S491

E. BUSS, A. STAHL, R. GEERTZ and G. GERCKEN: Cytotoxic effects of dust particles on alveolar macrophages S497

N. H. SEEMAYER, W. HADNAGY and R. TOMINGAS: Evaluation of health risks by airborne particulates from in vitro cyto- and genotoxicity testing on human and rodent tissue culture cells: a longitudinal study from 1975 until now S501

M. WIENER-SCHMUCK, I. LIND, G. POLZER and A. SEIDEL: *In vivo* and *in vitro* effects of rare earth compounds S505

J. SCHIMMELPFENG and A. SEIDEL: *In vitro* effects of titanium dioxide (rutile and anatase) on bovine alveolar macrophages S509

W. WILCZEK, E. DROSSELMEYER, H. F. KRUG and A. SEIDEL: Effects of some high T_c superconducting materials on alveolar macrophages S513

4. *Aerosol Measurement Techniques*

P. GÖRNER, D. BEMER and J. F. FABRIÈS: Theoretical and methodological approach of photometer calibration S517

B. SACHWEH, H. UMHAUER and H. BÜTTNER: Calibration of Optical Particle counters: comparison between theoretically and experimentally derived results S521

H. HORVATH and G. METZIG: Experimental determination of the accuracy of light absorption measurements with the integrating plate method S525

R. A. MAVLIEV *et al.*: Optical method for registration of submicron particles in flames and jets S529

F. SCHMIDT, K. G. SCHMIDT and H. FISSAN: Methods for detection of submicron particles by a light microscope S535

F. PRODI and A. MENNELLA: Measurements of optical characteristics of dilute suspensions and dry deposits of clay particles with a polar nephelometer S539

TH. KRAUT, P. DRTINA, M. KNOCH and A. FROHN: Size distribution of a medical respirator—comparison of two light scattering measurement techniques S543

S. WESTENBERGER, T. HEIBEL, J. GEBHART and C. ROTH: Continuous monitoring of droplet production of a vibrating orifice generator by laser light extinction S547

Y. J. KIM and J. F. BOATMAN: The effects that the optical properties of particles have on atmospheric aerosol measurements with optical particle spectrometers S551

V. V. MAXIMENKO, V. A. KRIKUNOFF and A. A. LUSHNIKOV: Optics of the aerosol deposit S555

E. P. ZEGE, I. L. KATSEV and A. A. KOKHANOVSKY: Analytical methods as applied to aerosol optics S559

L. A. JACKMAN, S. P. LAVELLE and P. F. NOLAN: High speed micro-cinematography of aerosols S563

P. BÜSCHER and A. SCHMIDT-OTT: A new concept for a unipolar diffusion charger S567

A. WIEDENSOHLER, B. G. MARTINSSON and H.-C. HANSSON: A new unipolar charger for submicron particles S571

R. J. RICHARDSON, W. T. MCDERMOTT, A. SCHWARZ and M. R. STOLZENBURG: Developments in 30 angstrom particle detection for ultraclean gas systems S575

H. BURTSCHER, A. GLINZ and M. OCHS: Ions in combustion exhaust as soot monitor S579

A. LEONARDI, H. BURTSCHER, U. BALTENSPERGER and A. WEBER: Relation between different methods to monitor combustion aerosols S583

H. DREIHELLER, D. RENSING, K. STAUBER, N. TROST and H. WENDT: Measurement of diesel particle concentration by the radiometric measurement principle S587

B. R. BOWSHER and A. L. NICHOLS: Chemical characterisation of nuclear aerosols by surface analysis techniques S591

P. Beckord and G. Höfelmann: On-line measurement of a buoyant plume produced by a smouldering fire in an enclosure S597

G. Höfelmann and P. Beckord: On-line determination of aerosol parameters by means of mechanical interactions S601

E. Swietlicki, G. Lövestam and U. Wätjen: Proton microprobe single particle analysis S605

E. Ulrich, C. Beckmann and G. Israël: The characterization of carbon species in particulate matter by successive thermal desorption S609

I. A. Marshall, J. P. Mitchell and W. D. Griffiths: Calibration of a TSI Aerodynamic Particle Sizer with monodisperse non-spherical particles S613

A. Wiedensohler, H.-C. Hansson, P. B. Keady and R. Caldow: Experimental verification of the particle detection efficiency of TSI 3025 UCPC S617

C. C. Wang, R. A. Fletcher, E. B. Steel and J. W. Gentry: Measurement of the uniformity of particle deposition of filter cassette sampling in a low velocity wind tunnel S621

E. Schultz: A comparison of indoor and outdoor particle concentration based on size fractionating deposition measurement S625

U. Delprato and V. Lombardi: An automatic system for the isokinetic sampling and the PM_{10} concentration monitoring of industrial stack emissions S629

B. Georgi, A. Krasenbrink and M. Below: Particle measurement in the lower stratosphere: an intercomparison of different sampling inlets for the use at high wind velocities S633

C. Helsper, W. Mölter and P. Haller: Representative dilution of aerosols by a factor of 10,000 S637

G. N. Lipatov, S. A. Grinshpun and T. I. Semenyuk: Peculiarities of aerosol remote sampling from the gas lines. The problem of sampling points selection S641

S. M. Wall: Development of an improved source sampling method for polycyclic aromatic hydrocarbons, and other semi-volatile organic species S645

M. H. E. Ball and J. P. Mitchell: Development of an improved high-volume sampling arrangement for the TSI Aerodynamic Particle Sizer S649

M. Krämer and L. Schütz: Collection efficiency of the Mainz-Rotating-Arm-Collector S653

5. *Practical Aerosol Aspects*

W. Möller, C. Roth and W. Stahlhofen: Improved spinning top aerosol-generator for the production of high concentrated ferrimagnetic aerosols S657

H. Mori, J. Marijnissen and B. Scarlett: Optimal conditions for the generation of monodisperse aerosol particles using the spinning-top generator S661

P. M. Melton and R. M. Harrison: The prediction of droplet size and dispersity from a hydraulic hollow cone nozzle with consideration of physical and rheological properties S665

G. M. H. Meesters, P. H. W. Vercoulen, J. C. M. Marijnissen and B. Scarlett: A monodisperse-aerosol-generator, using the Taylor cone, for the production of 1 μm droplets S669

J. Fernandez de la Mora, J. Navascues, F. Fernandez and J. Rosell-Llompart: Generation of submicron monodisperse aerosols in electrosprays S673

J. Mäkelä and K. Hämeri: Sulphuric acid aerosol formation by irradiation: a flow reactor set up S677

J. J. F. Strecker and P. Roth: Generation of monodisperse and of bimodal aerosols by the expansion wave-driven aerosol generator S681

O. Kievit, J. C. M. Marijnissen, P. J. T. Verheijen and B. Scarlett: Some improvements on the particle beam generator S685

R. A. Trottier and R. C. Brown: The effect of aerosol charge and filter charge on the filtration of submicrometre aerosols S689

S. Gharieni and H. Fissan: A new generation of membrane filters S693

G. M. Braga Marcazzan, B. Bellagamba, M. Bellotto, C. Boni, A. Caridi, E. Cereda and C. Chemelli: Fly ash from a coal power plant: correlation of elemental and structural composition with electrostatic precipitator collection efficiency S697

J. I. T. Stenhouse and K. Barnes: Aerosol deposition in electrostatic precipitators S703

W. Zhangfa, Z. Guoquan and I. Colbeck: A theoretical study on the additional velocity of a charged particle due to the impact of ions with high velocity in the collection space of an electrostatic precipitator S707

J. W. Gentry, K. R. Spurny, J. Schörmann and R.-J. Han: Filtration and diffusion of asbestos fibers: comparison of experiment and theory S711

M. Shapiro, I. J. Kettner and H. Brenner: Dispersion model for interceptional and diffusional collection of fine particles in fibrous beds. A comparison with experiments S715

H. H. Schicht: Contamination control—an indispensable factor in high-technology manufacturing tasks S719

M. Bohgard and A.-K. Ekholm: A method for the characterization of the aerosols emitted from handling of dye pigments in the paint manufacturing industry S733

Q. Tang, H. Albers, A. Driessen, L. T. H. Hilderink, P. V. Lambeck and Th. J. A. Popma: Granular YBaCuO films prepared by Metalorganic Chemical Aerosol Deposition Technology S737

J. Jokiniemi, J. Mäkynen and E. Kauppinen: Aerosol behavior in coal combustion processes S741

H.-J. Klingen and P. Roth: Time-resolved and time-averaged diesel particle measurement at the exhaust valve and in the exhaust pipe S745

G. J. Praml, M. H. Zeitler-Feicht, A. L. Hartmann and H. Riedel: Dust exposure of man and animal in swine confinement buildings: benefits of full shift continuous registration S751

Alphabetical List of Authors I